

1 **WHAT IS CLAIMED IS:**

2 1. A process for the recovery of acrylonitrile from a reactor effluent stream
3 comprising acrylonitrile, water, and organic impurities, comprising the steps of:
4 quenching an ammonoxidation reactor effluent stream that comprises acrylonitrile,
5 water, and organic impurities with an aqueous quench stream, thereby
6 producing a cooled reactor effluent stream;
7 passing the cooled reactor effluent stream through an absorption column, thereby
8 generating an absorber bottoms stream that comprises water, acrylonitrile,
9 and organic impurities; and
10 passing the absorber bottoms stream through a single recovery and stripper
11 column, generating an acrylonitrile-rich overhead stream, a lean water side
12 stream, and a recovery and stripper bottoms stream that comprises organic
13 impurities without an enrichment column.

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15 2. The process of claim 1, where the acrylonitrile-rich overhead stream is passed
16 through a decanter to separate water from acrylonitrile.

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18 3. The process of claim 1, where the lean water side stream is recycled for use in the
19 absorption column.

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21 4. The process of claim 1, where the ammonoxidation reactor effluent stream is
22 produced by catalytic reaction of ammonia and propylene.

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24 5. The process of claim 1, where an acetonitrile stream is removed from said
25 recovery and stripper column.

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27 6. The process of claim 5, wherein said acetonitrile side stream comprises 99.0% by
28 weight of the acetonitrile from said absorber bottoms stream.

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1 7. The process of claim 5, wherein said acetonitrile side stream comprises 99.5% by
2 weight of the acetonitrile from said absorber bottoms stream.

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4 8. A system for the recovery of pure acrylonitrile from an ammonoxidation reactor
5 effluent stream comprising: (a) an ammonoxidation reactor; (b) an absorption column, and
6 (c) a single recovery and stripper column, the system not including an enrichment
7 column.

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9 9. The system of claim 8, where at least about 99.0% by weight of acrylonitrile is
10 recovered from said single recovery and stripper column.

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12 10. The system of claim 8, where at least about 99.5% by weight of acrylonitrile is
13 recovered from said single recovery and stripper column.

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15 11. The system of claim 8, where at least about 99.7% by weight of acrylonitrile is
16 recovered from said single recovery and stripper column.

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